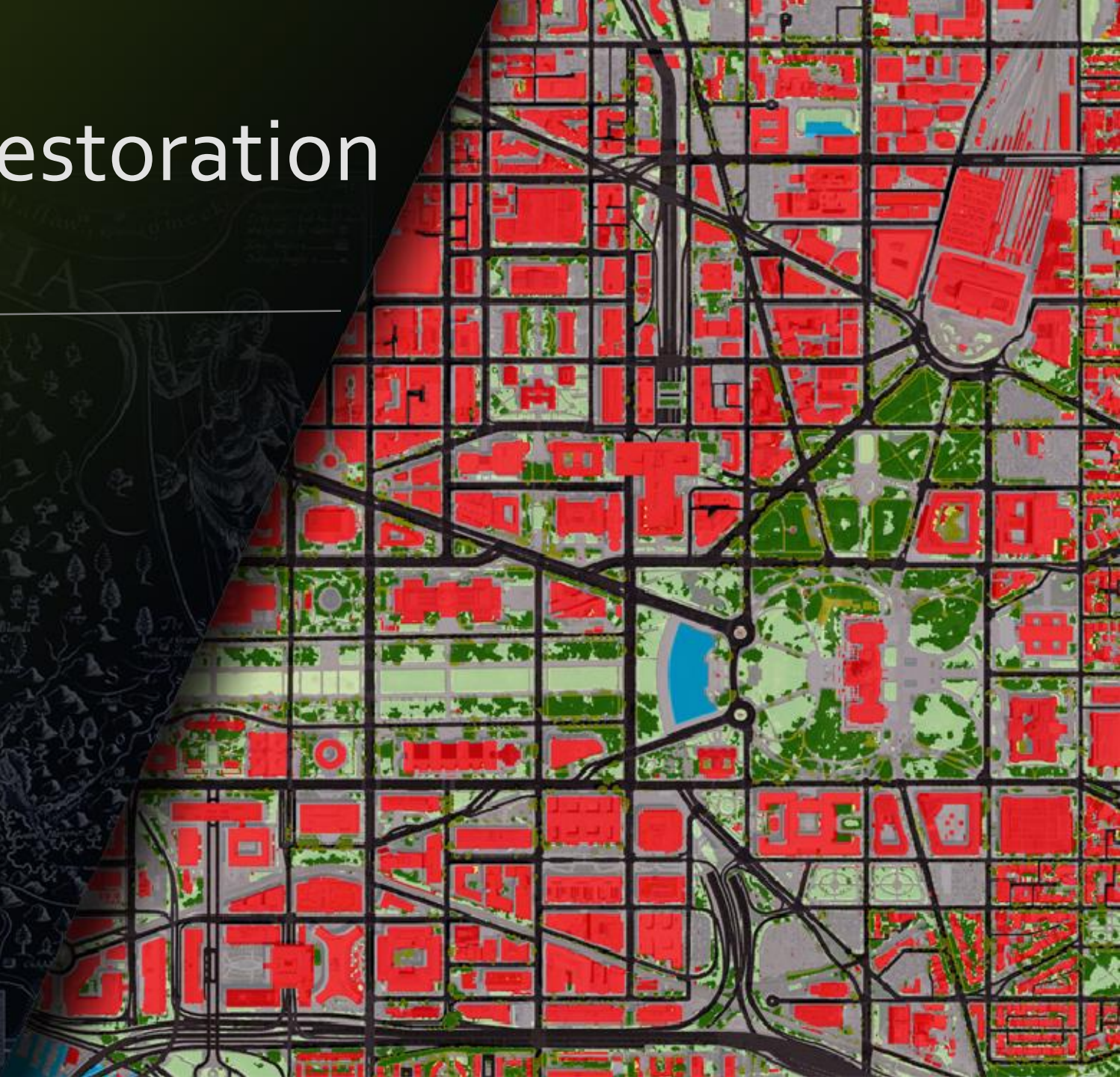
Conservation and Restoration Datasets and Tools



Louis Keddell
Geospatial Program Manager
lkeddell@chesapeakeconservancy.org

Chesapeake Conservancy
EXPLORE. CONSERVE. INNOVATE.

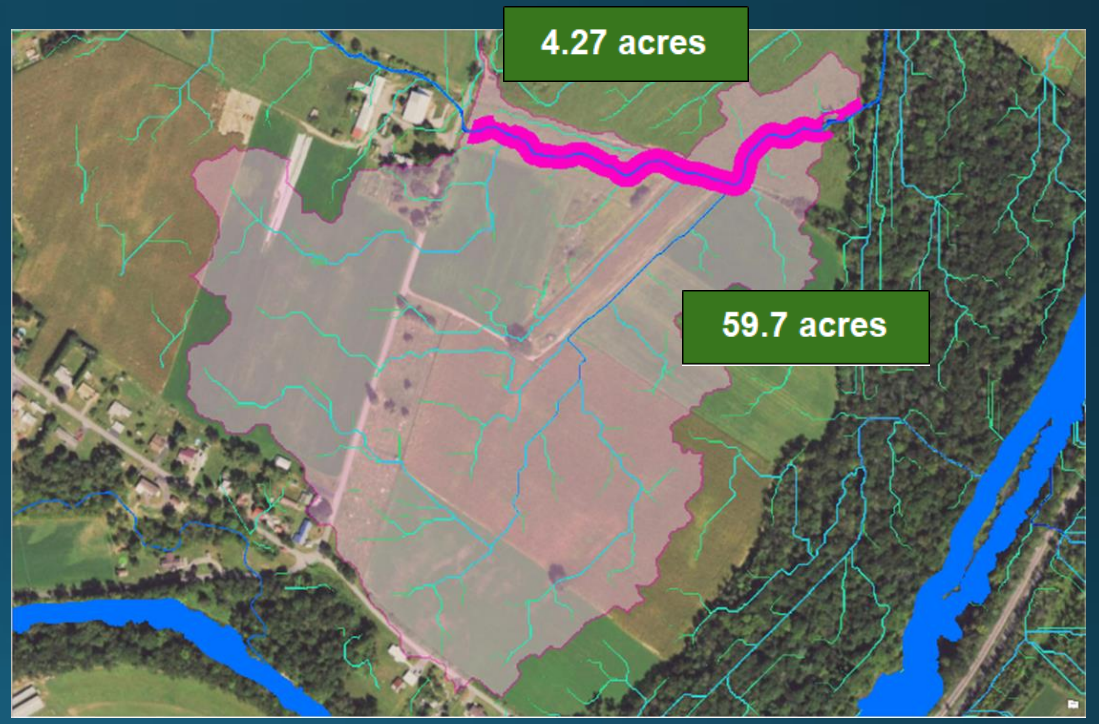
CONSERVATION INNOVATION CENTER
CHESAPEAKE CONSERVANCY

Overview

- *CBP Objectives: watershed-wide datasets*
- *Enhancing conservation and restoration*
- *Visualizing the Data*

Precision conservation

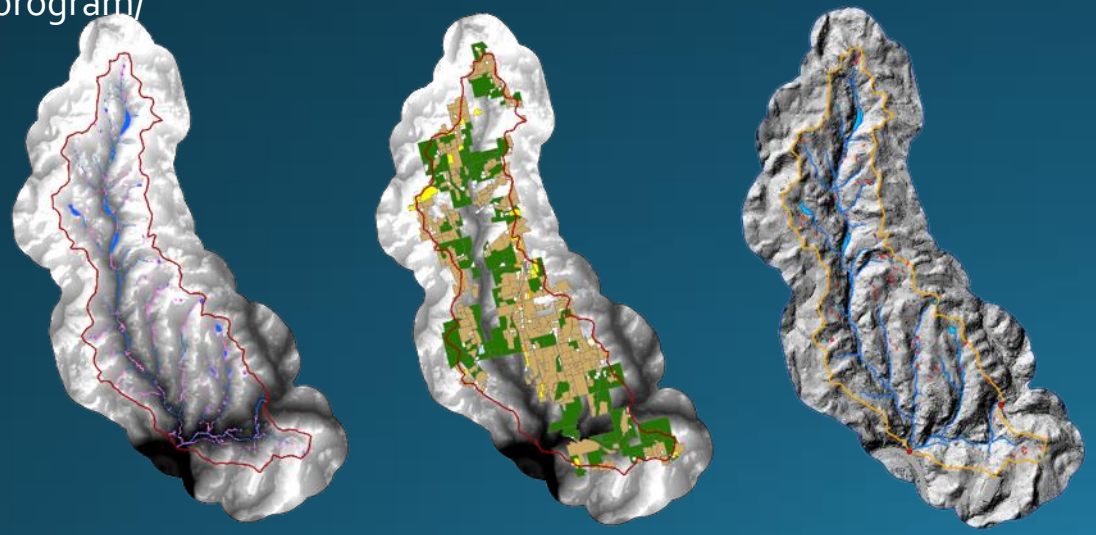
Getting the right practices, in the right place, at the right scale.

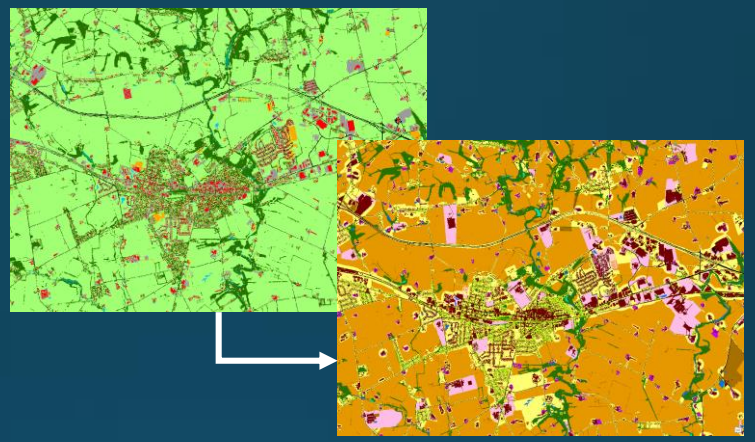


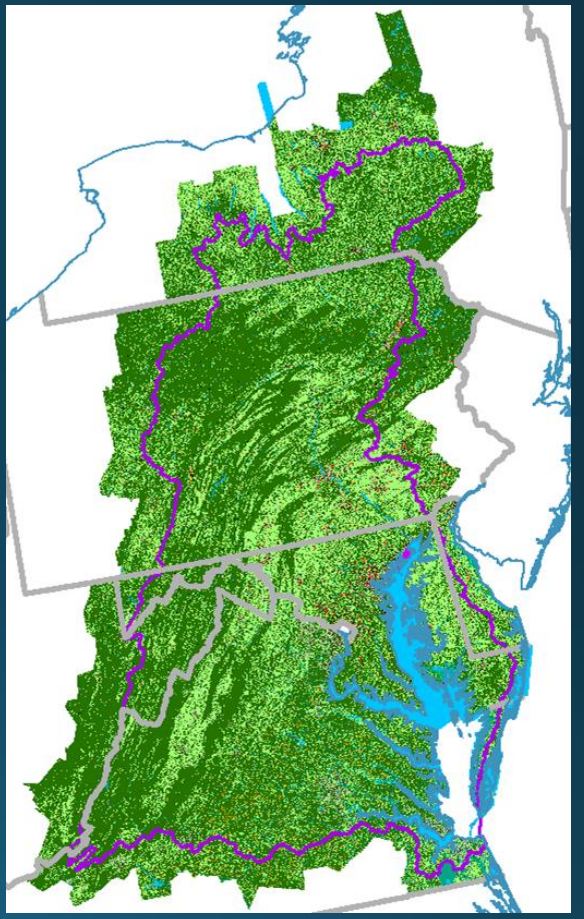
6-year Cooperative Agreement with the Chesapeake Bay Program

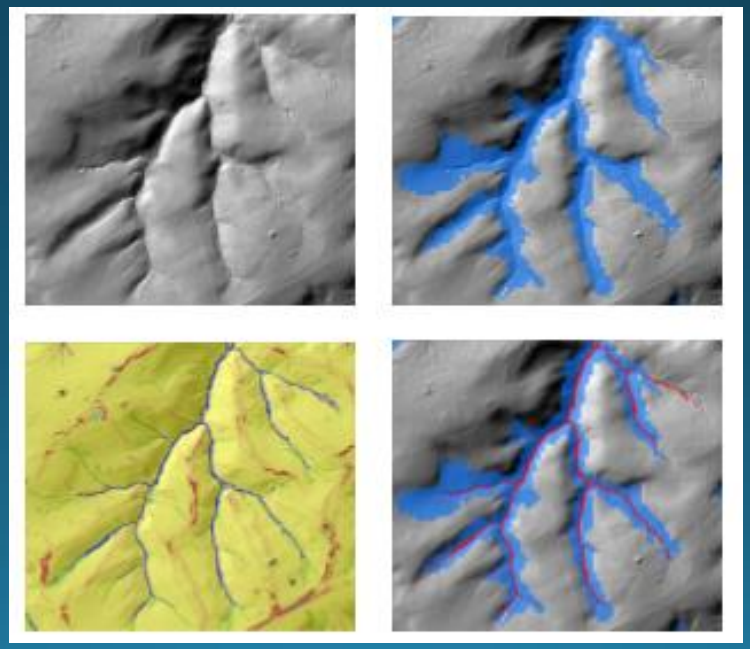
- Objective 1: High resolution Land Cover and Land Use
- Objective 2: High resolution Hydrography and Ditch Mapping
- Objective 3: BMP Opportunity Mapping
- Objective 4: CBP Geospatial Support

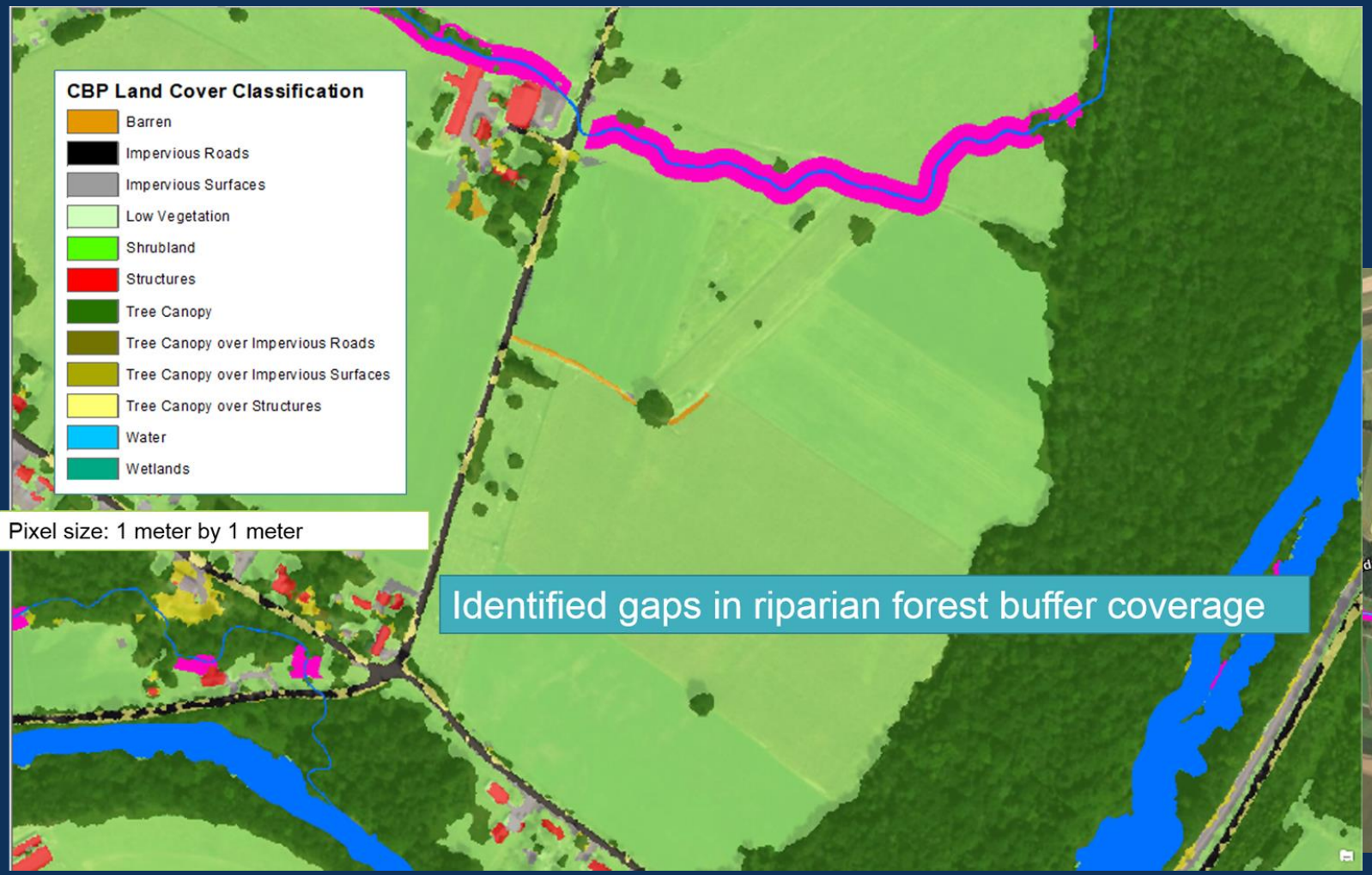
For more information:
https://www.chesapeakeconservancy.org/conservation-innovation-center/precision-conservation/chesapeake-bay-program/







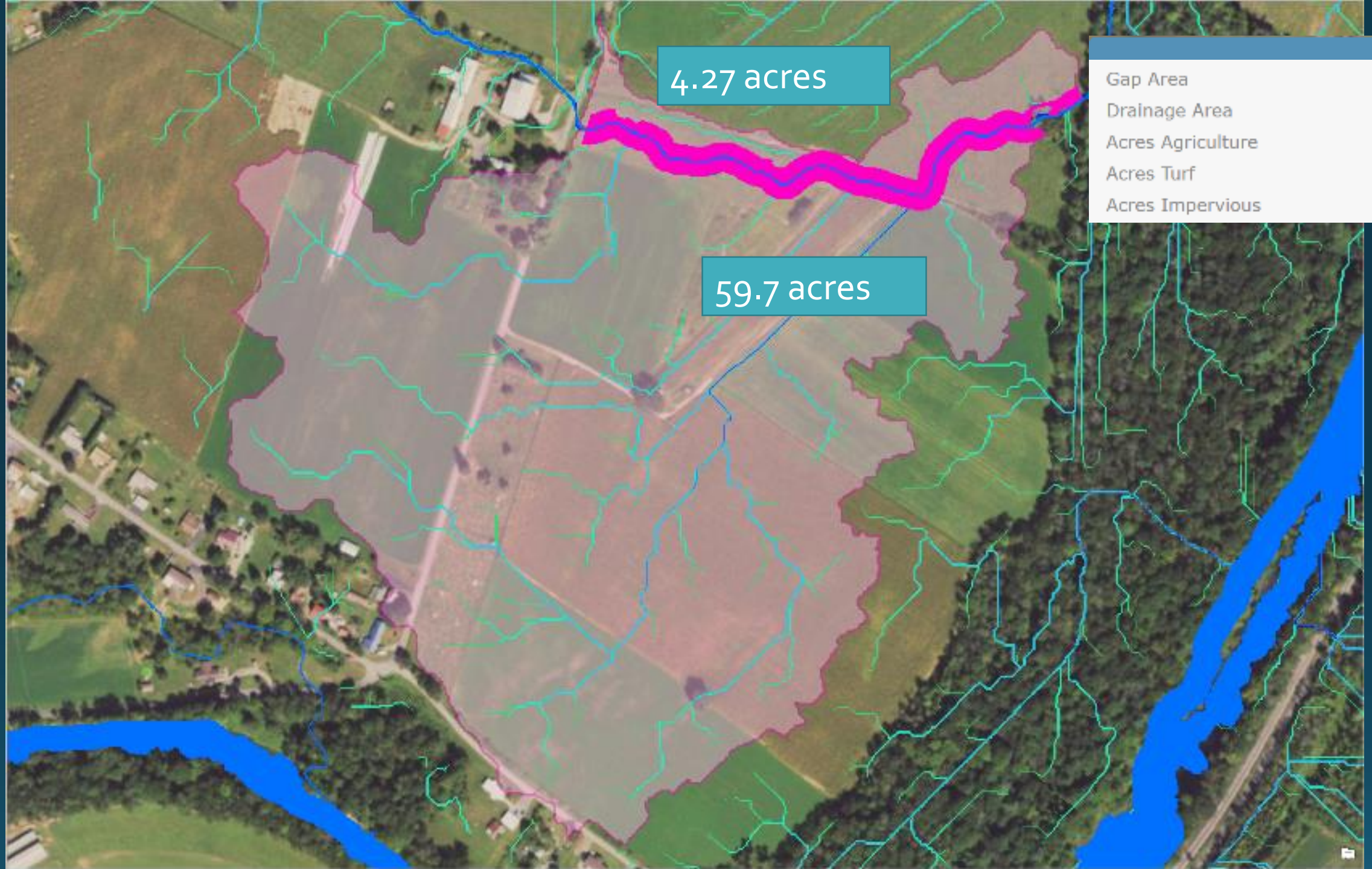




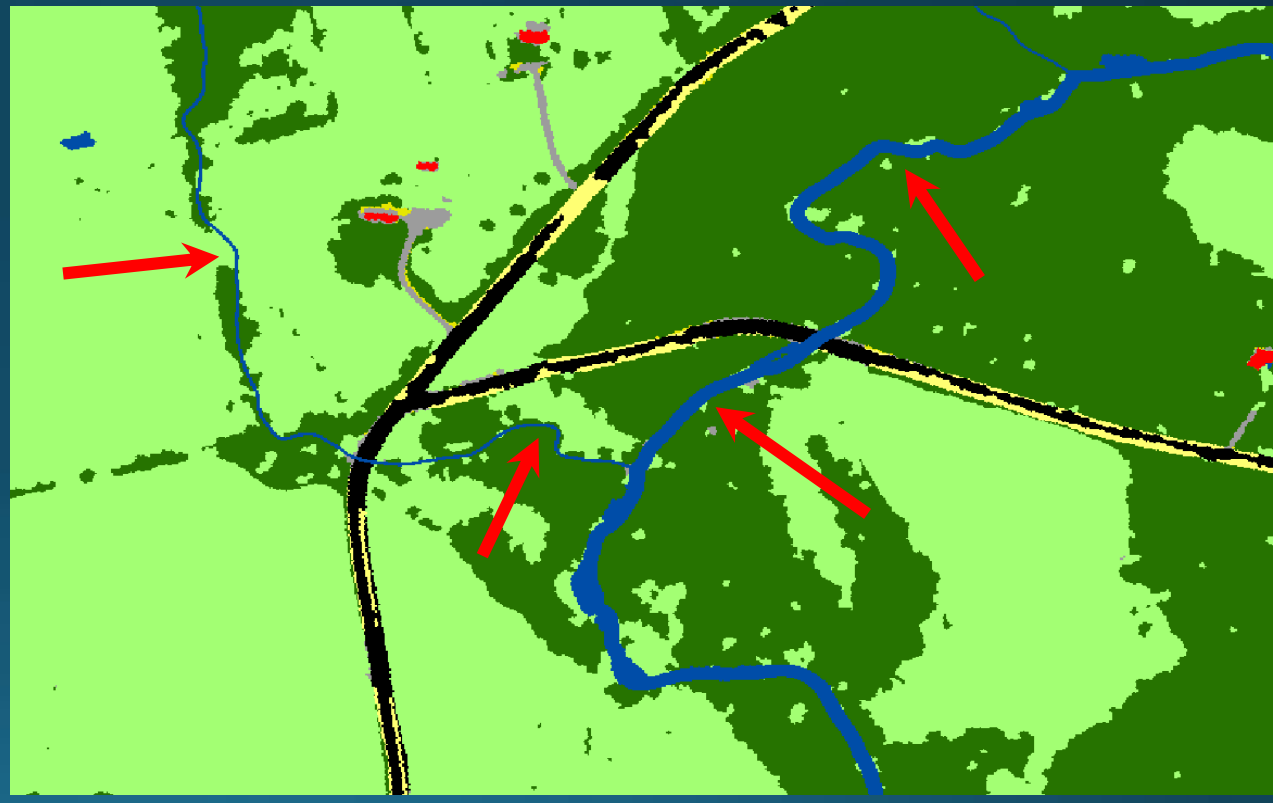
Chesapeake Bay Program
Science. Restoration. Partnership.

CONSERVATION INNOVATION CENTER
CHESAPEAKE CONSERVANCY

Riparian Forest Buffer opportunity footprints


4.27 acres
59.7 acres
Gap Area 1.16
Drainage Area 59.70
Acres Agriculture 53.62
Acres Turf 5
Acres Impervious 0

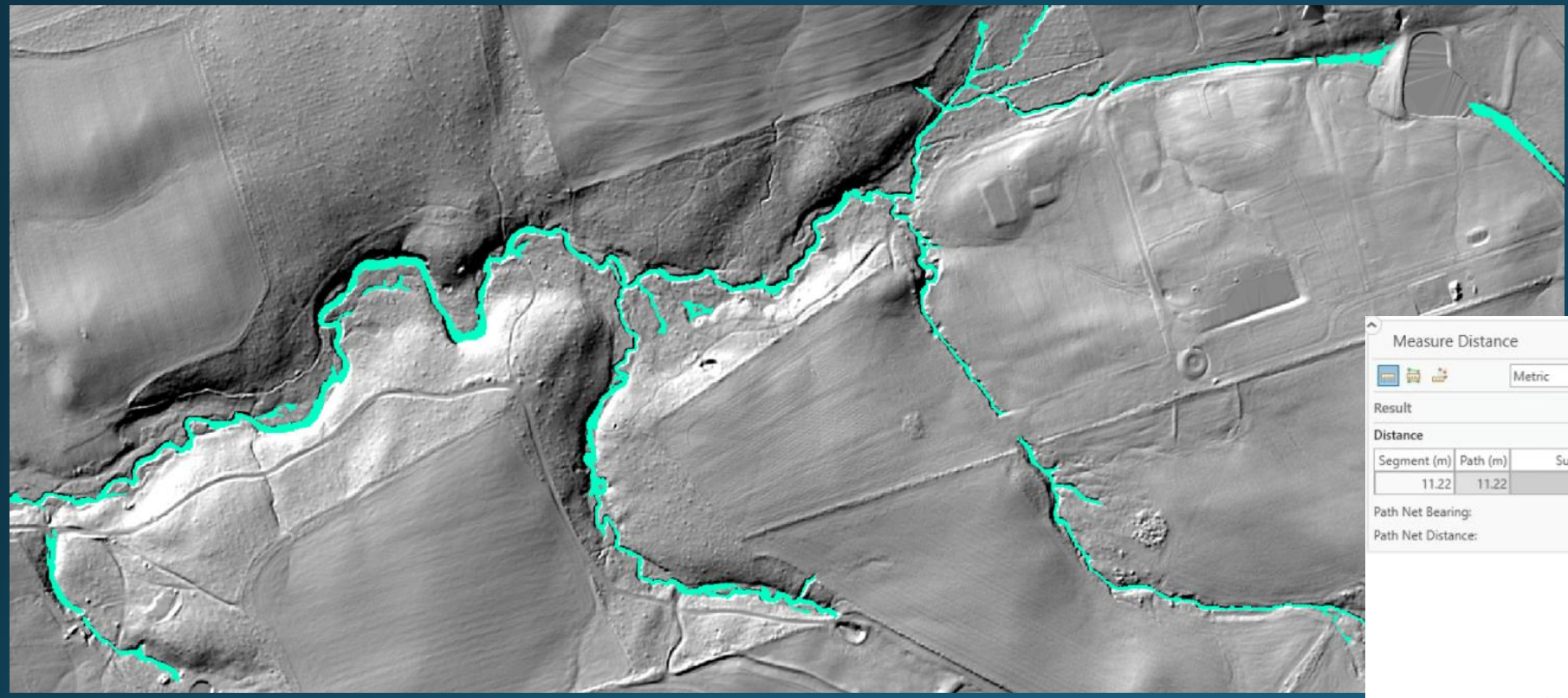
Enhanced flowpath dataset

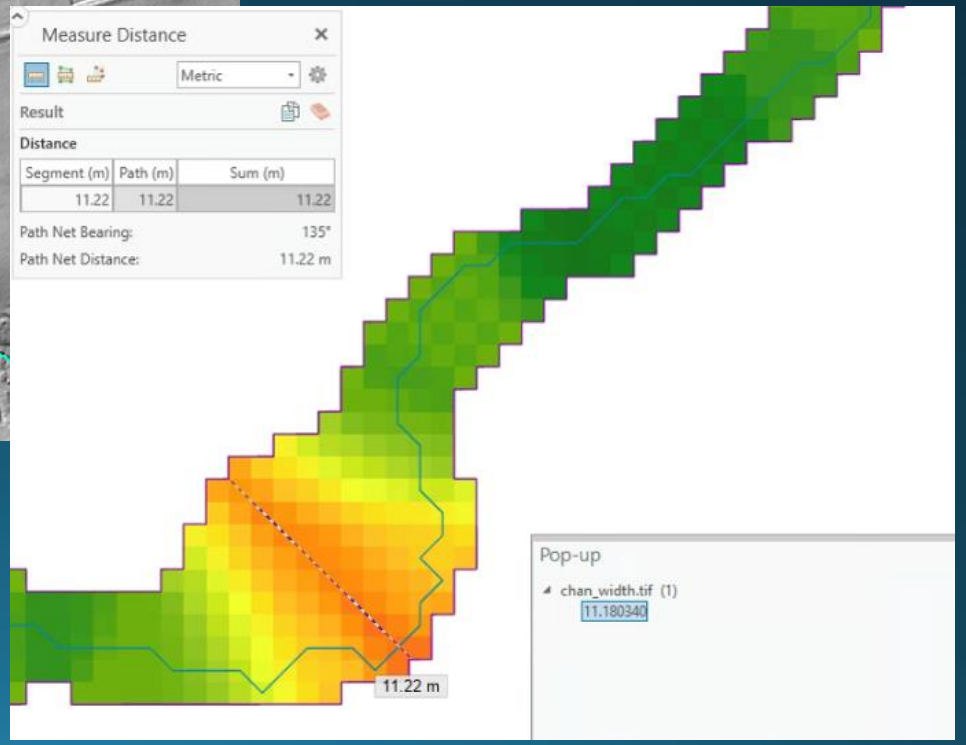


Please see Enhanced Flow Path links for more information:
https://www.chesapeakeconservancy.org/conservation-innovation-center/high-resolution-data/enhanced-flow-paths/
https://chesapeakeconservancy.org/wp-content/uploads/2018/07/CIC_Enhanced_Flowpath_Methods_20180703.pdf

Hyper-Resolution Hydrography

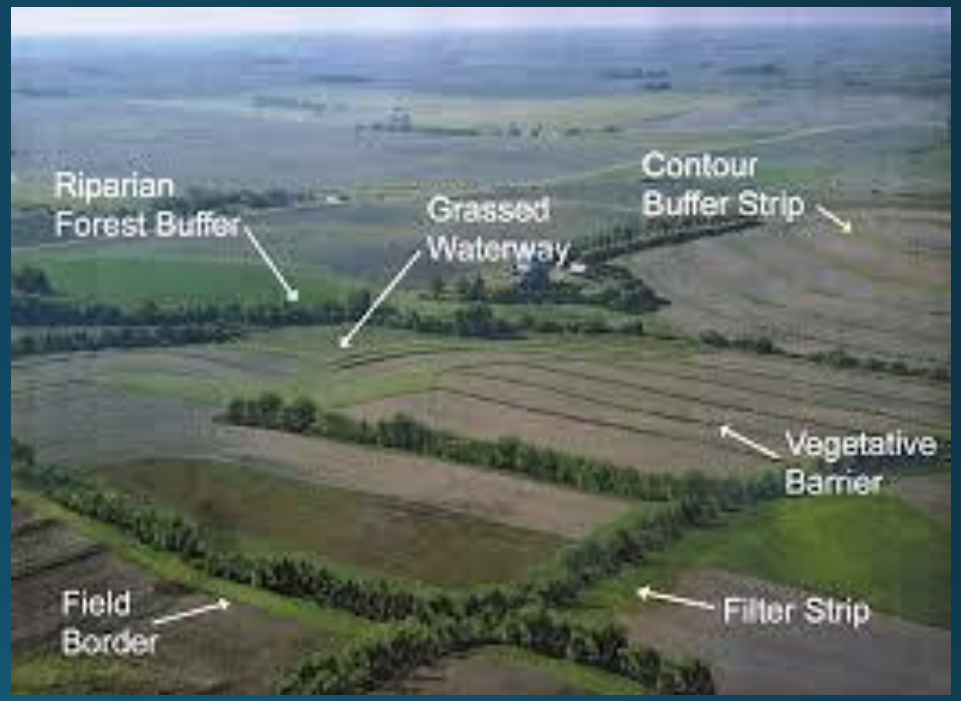
Channel width and bank height





BMP Opportunity Mapping

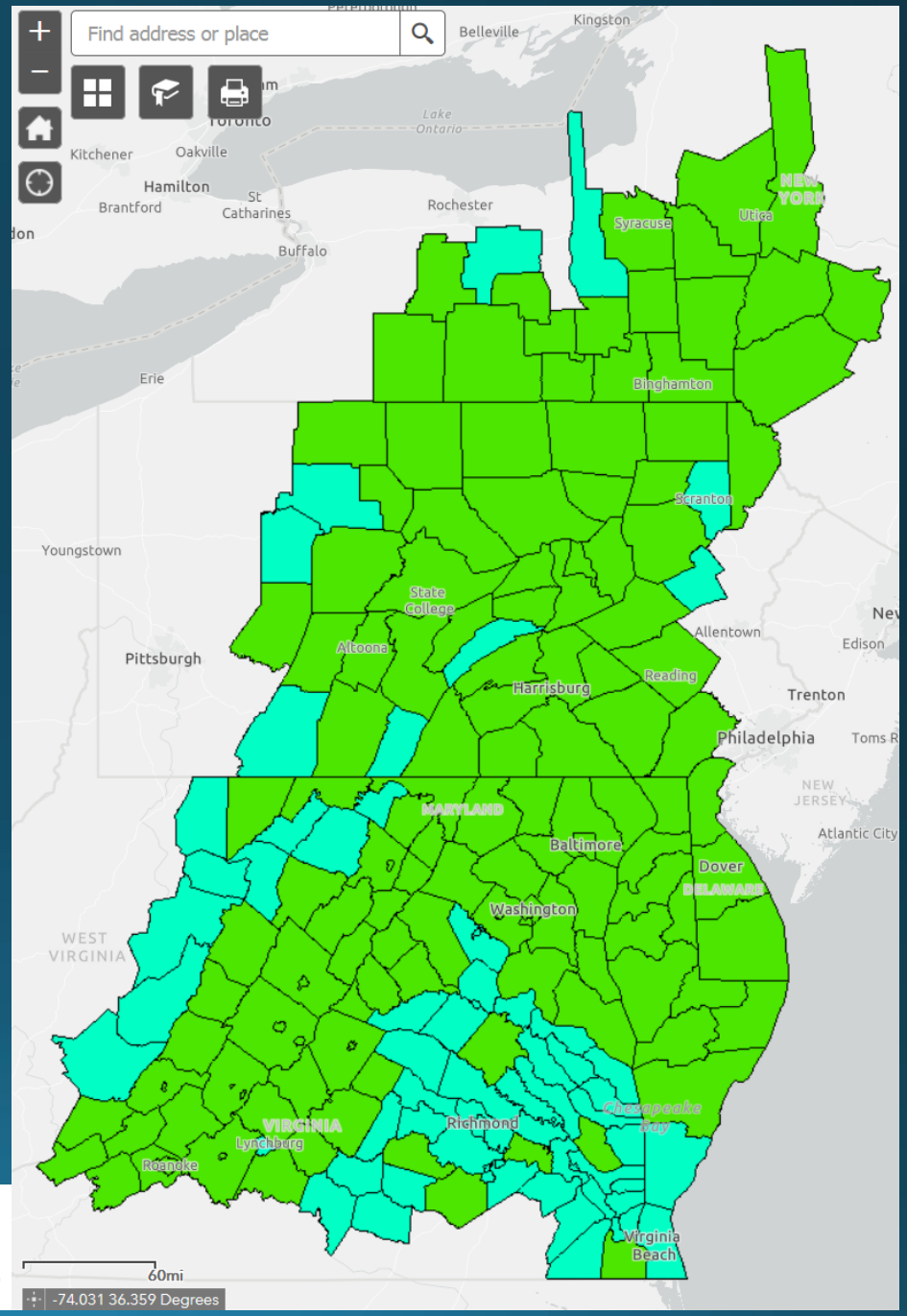
- BMP opportunity layers as a reference resource:
  - Streamline watershed planning
  - Engage wide audience
  - Potential opportunities for suite of practices
  - Starting point for more efficient field visits
  - Data to support funding proposals



Schematic Illustration of Several In-Field and Edge-of-Field Buffer Types (photo courtesy of USDA-NRCS).

High resolution datasets schedule

- High Resolution Land Use/Land Cover (HRLULC)
  - 2013/14 HRLULC available
  - 2017/18 HRLULC (late 2021)
  - 2021/22 HRLULC (TBD, pending imagery release and review)
- Hyper Resolution Hydrography
  - (TBD, dependent on data availability and review)
- BMP Opportunity Datasets
  - (TBD, dependent on data availability and review)
  - Maryland statewide Riparian forest buffer opportunity dataset
    - 2013/14 HRLC and EFP hydrography (Fall 2021)
    - Updated 2017/18 HRLC and EFP hydrography (expected 2022)
    - Updated 2021/22 HRLC and HRH hydrography

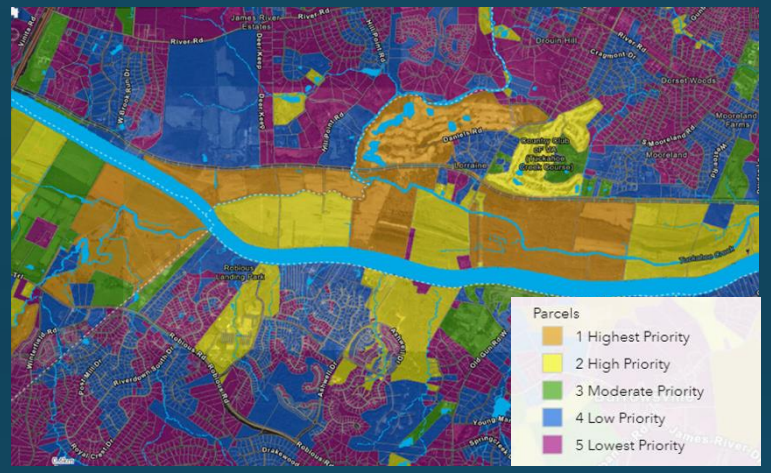


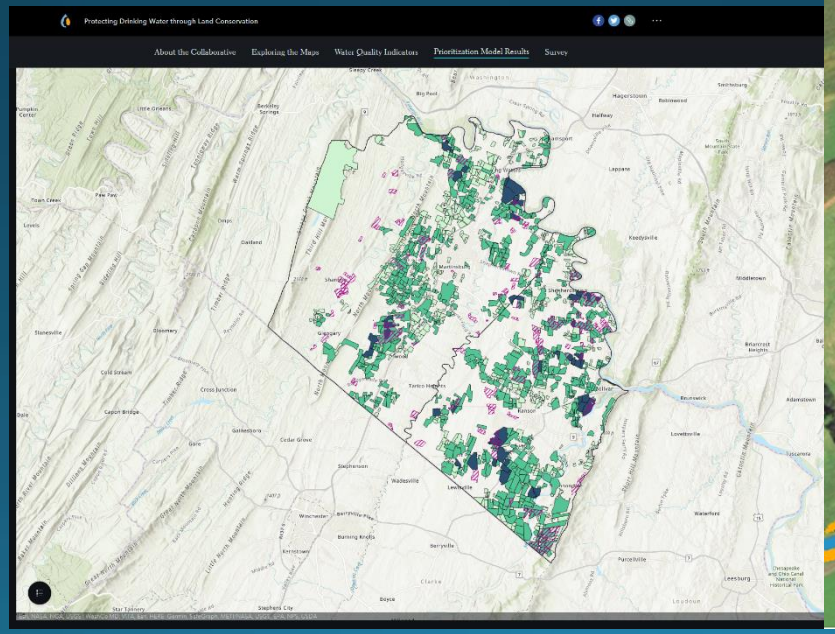
[Link: HRLULC and Hydrography Status]

Visualizing the Data

- Prioritization tools
  - Common units of interest: by parcel, sub-watershed
  - Field scale restoration and conservation opportunities

- Web tools
  - Outreach and Education
  - Identifying potential projects
  - Coordination and Planning
  - Tracking progress of implemented projects
  - PDF Report Generation





Conservation and Restoration in the Antietam/Catoctin Watershed

A Story Map

Explore the parcels within the Antietam/Catoctin watersheds to see where there are opportunities for riparian buffer restoration projects!

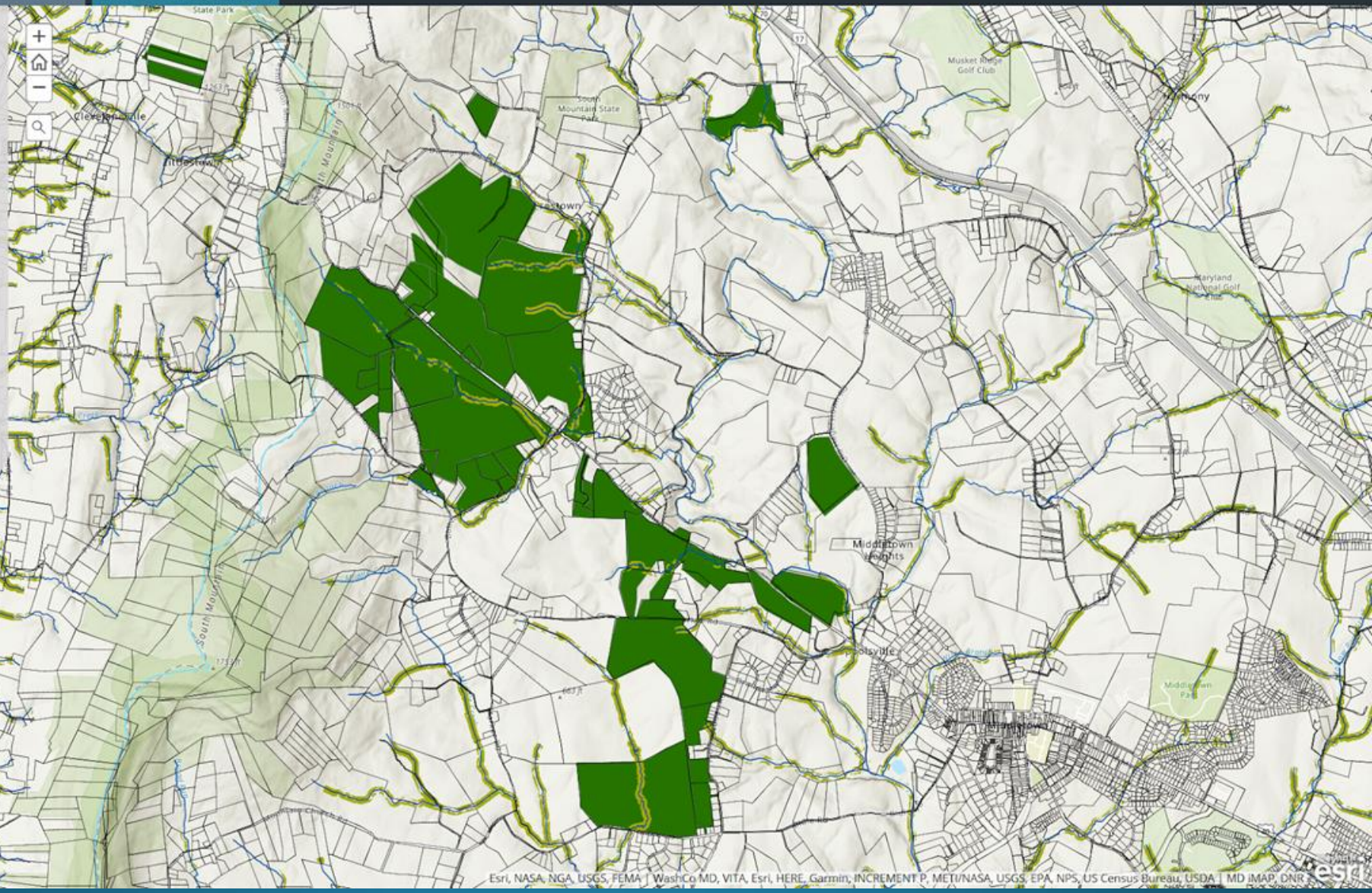
Parcels

Streams

Riparian Buffer Restoration Opportunities

MET Properties

8 Digit Watersheds



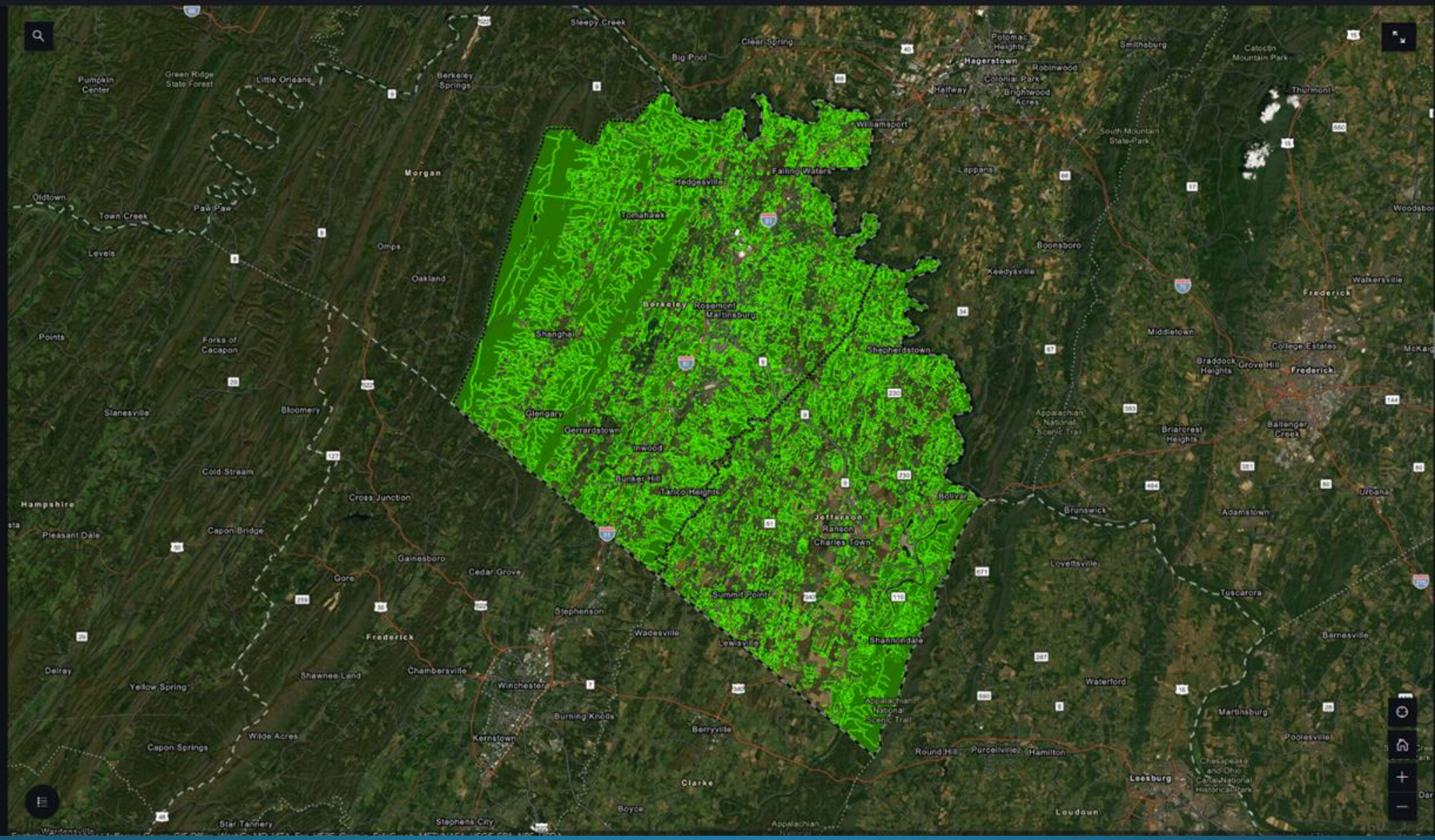
Tree Canopy

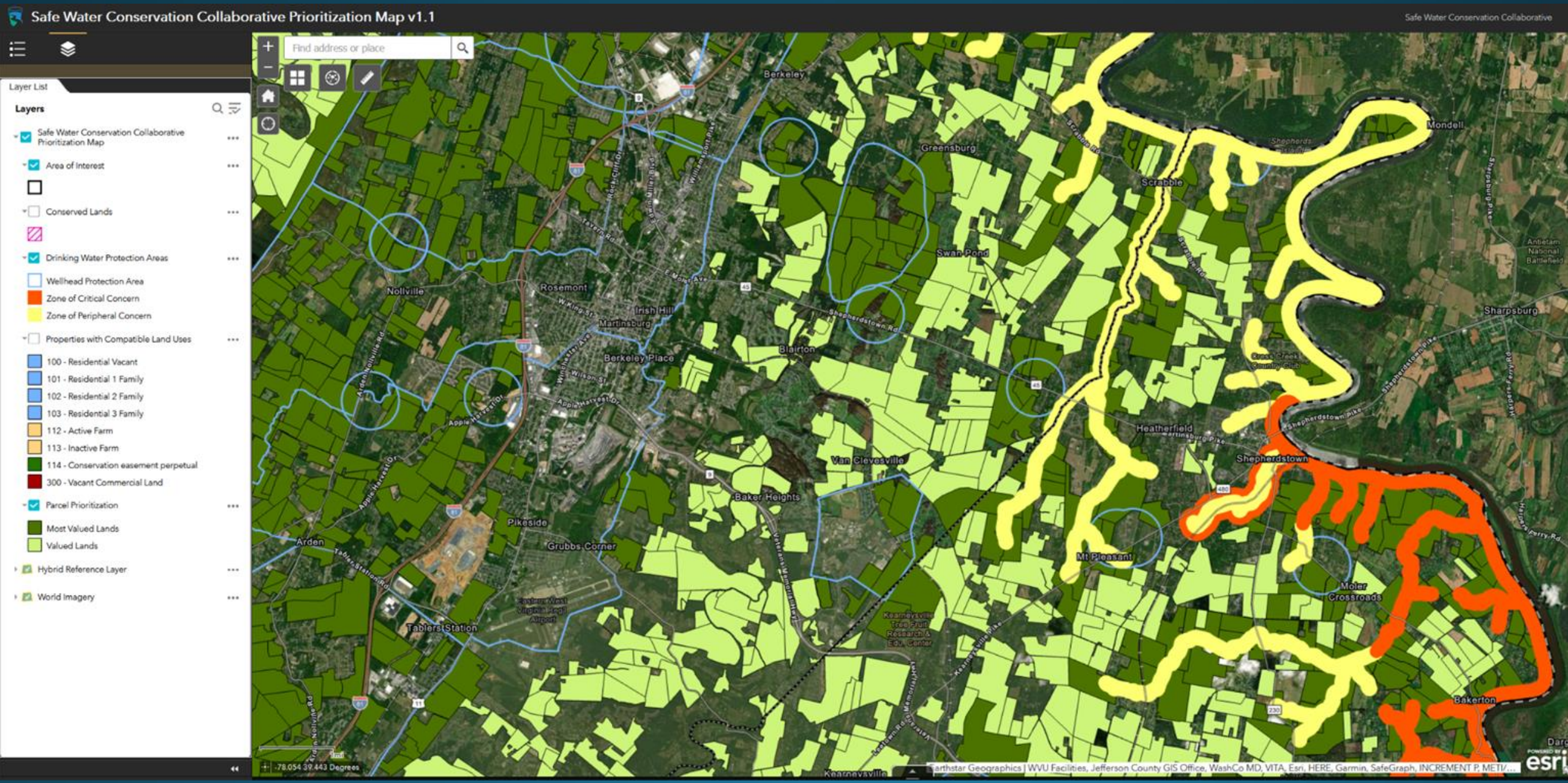
Source: Chesapeake Bay High Resolution Land Cover from Chesapeake Conservancy Conservation Innovation Center, WVU GIS Clearinghouse. Erased the 100' riparian forest buffers from the tree canopy layer to create this indicator.

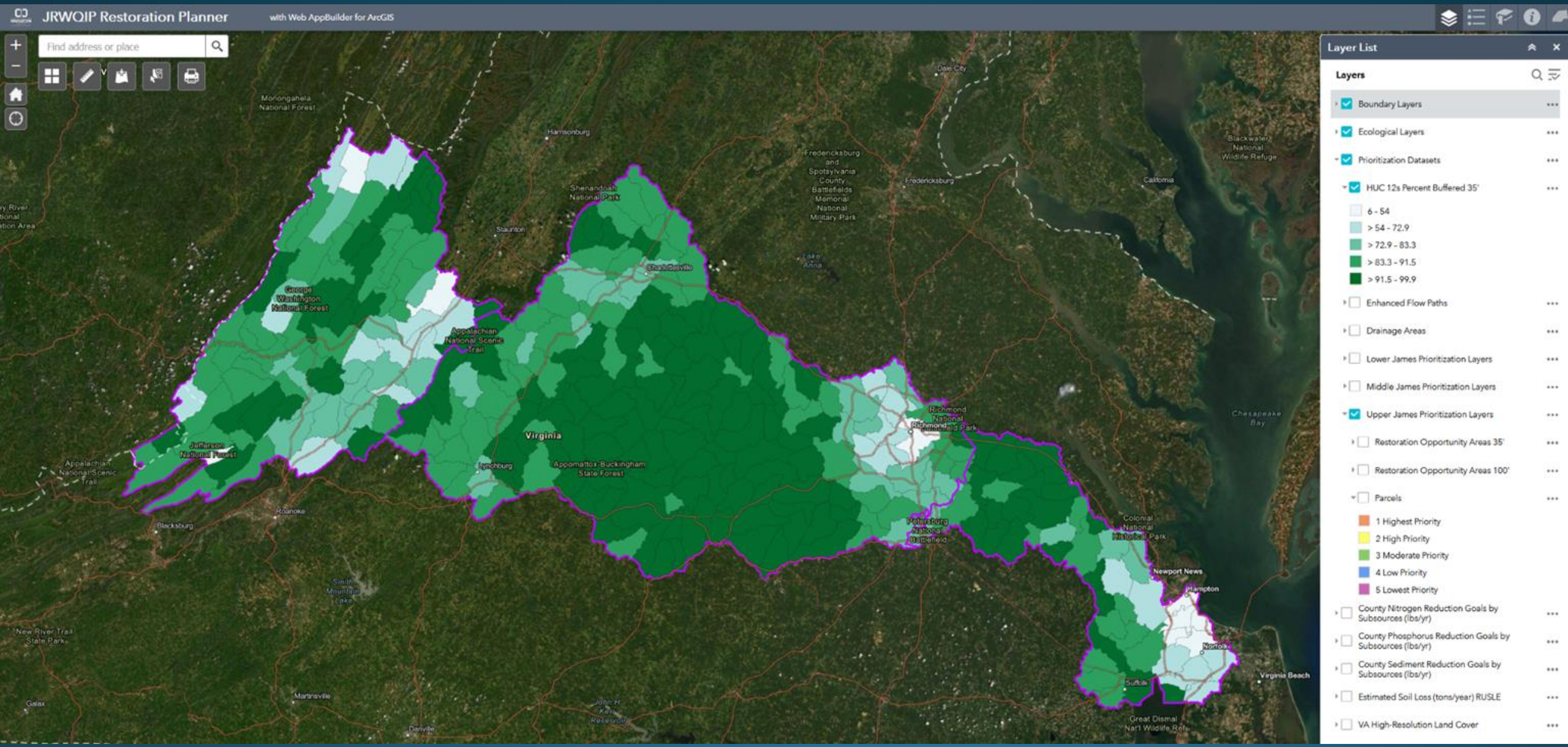
Measurement: Acres of tree canopy

Justification: "Forests are the most effective land cover for maintenance of water quality. They serve as natural sponges, collecting and filtering rainfall and releasing it slowly into streams. Forest cover has been directly linked to drinking water treatment costs – the more forest in a source water watershed, the lower the treatment costs", Common Waters Fund.

Click here to open this web map in a new tab.




Safe Water Conservation Collaborative Prioritization Map v1.1
Safe Water Conservation Collaborative
Find address or place
Layer List
Layers
Safe Water Conservation Collaborative Prioritization Map
Area of Interest
Conserved Lands
Drinking Water Protection Areas
Wellhead Protection Area
Zone of Critical Concern
Zone of Peripheral Concern
Properties with Compatible Land Uses
100 - Residential Vacant
101 - Residential 1 Family
102 - Residential 2 Family
103 - Residential 3 Family
112 - Active Farm
113 - Inactive Farm
114 - Conservation easement perpetual
300 - Vacant Commercial Land
Parcel Prioritization
Most Valued Lands
Valued Lands
Hybrid Reference Layer
World Imagery
Berkeley
Greensburg
Scrabble
Mondell
Swan Pond
Nollville
Rosemont
Martinsburg
Irish Hill
Berkeley Place
Blairton
Sharpsburg
Heatherfield
Shepherdstown
Van Clevesville
Baker Heights
Pikeside
Grubbs Corner
Arden
Mt Pleasant
Moler Crossroads
Tablers Station
Bakerton
Kearneysville
-78.054 39.443 Degrees
Earthstar Geographics | WVU Facilities, Jefferson County GIS Office, WashCo MD, VITA, Esri, HERE, Garmin, SafeGraph, INCREMENT P, METI/...
esri


JRWQIP Restoration Planner
with Web AppBuilder for ArcGIS
Find address or place
Layer List
Layers
Boundary Layers
Ecological Layers
Prioritization Datasets
HUC 12s Percent Buffered 35'
6 - 54
> 54 - 72.9
> 72.9 - 83.3
> 83.3 - 91.5
> 91.5 - 99.9
Enhanced Flow Paths
Drainage Areas
Lower James Prioritization Layers
Middle James Prioritization Layers
Upper James Prioritization Layers
Restoration Opportunity Areas 35'
Restoration Opportunity Areas 100'
Parcels
1 Highest Priority
2 High Priority
3 Moderate Priority
4 Low Priority
5 Lowest Priority
County Nitrogen Reduction Goals by Subsources (lbs/yr)
County Phosphorus Reduction Goals by Subsources (lbs/yr)
County Sediment Reduction Goals by Subsources (lbs/yr)
Estimated Soil Loss (tons/year) RUSLE
VA High-Resolution Land Cover
Monongahela National Forest
Harrisonburg
Shenandoah National Park
Staunton
Fredericksburg and Spotsylvania County Battlefields Memorial National Military Park
Fredericksburg
Dale City
California
Blackwater National Wildlife Refuge
Lake Anna
Charlottesville
George Washington National Forest
Appalachian National Scenic Trail
Virginia
Richmond National Battlefield Park
Richmond
Jefferson National Forest
Lynchburg
Appomattox-Buckingham State Forest
Appalachian National Scenic Trail
Roanoke
Blacksburg
Petersburg National Battlefield
Colonial National Historical Park
Newport News
Hampton
Norfolk
Suffolk
Virginia Beach
Chesapeake Bay
Great Dismal Nat'l Wildlife Ref.
New River Trail State Park
Martinsville
Galax
Danville

https://restorationreports.com

Search

RESTORATION REPORTS

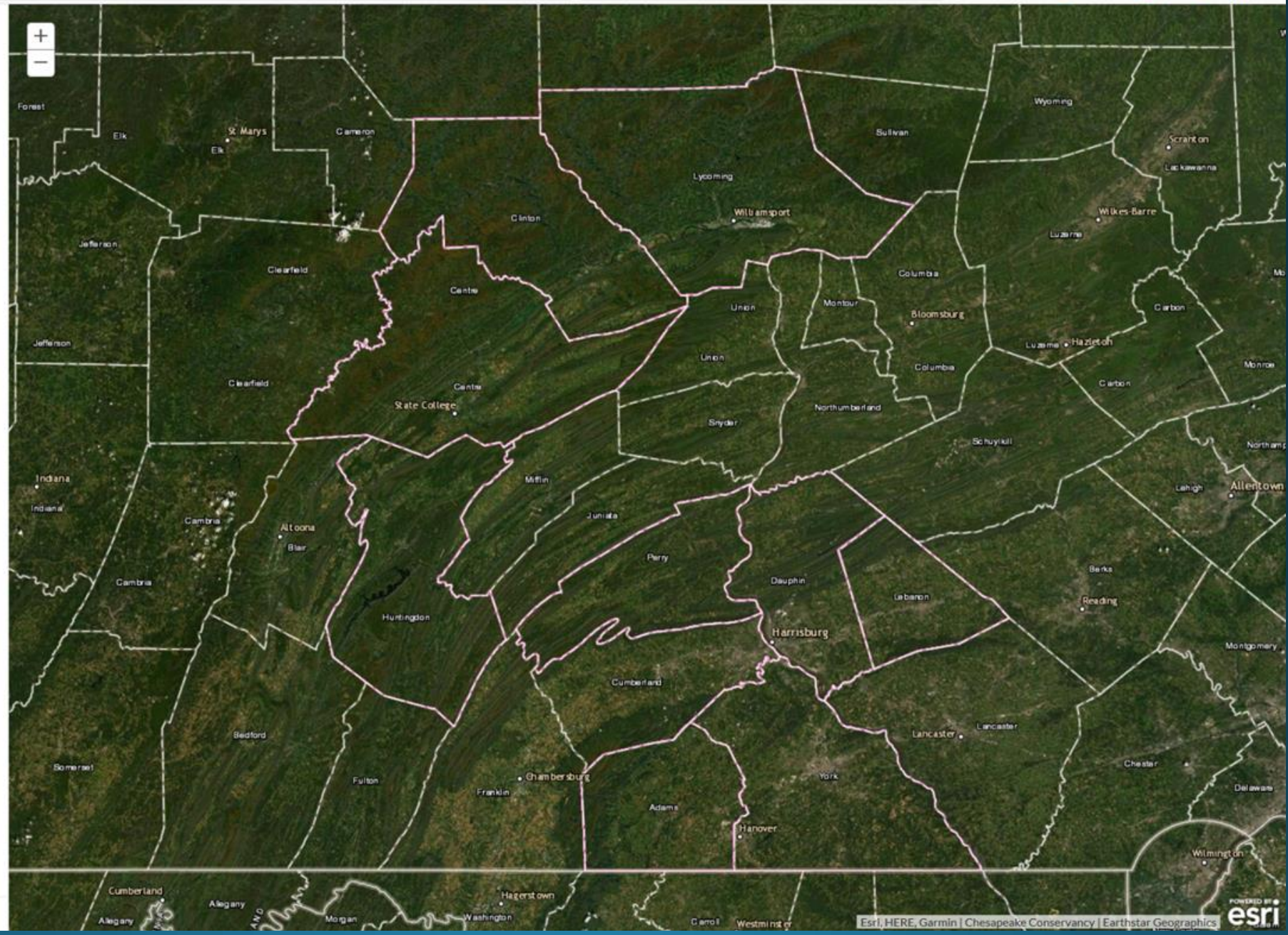
Precision conservation for your property

If you are a landowner in Adams, Clinton, Centre, Dauphin, Huntingdon, Lancaster, Lebanon, Lycoming, Perry, or York counties, Pennsylvania, this free, confidential tool can help you get information about restoration opportunities on your property that can improve the ecological conditions you care about.

Using state-of-the art data analysis, Restoration Reports generates a customized report for your property, including the watershed you are a part of, the wildlife species that may live on your property, and whether you are in close proximity to an impaired stream.

You can then select your management priorities, for example, improving the hunting and fishing on your property, or supporting your agricultural land uses.

Get started



Info | Partners | Resources

https://restorationreports.com

Search

1. Explore your property

PARCEL IDENTIFIER
38H11-0021---000

WATERSHED
Rock Creek

LAND COVER COMPOSITION (ACRES)

Land cover type	Within parcel
Tree canopy	27.70
Tree canopy over impervious surface	0.17
Shrubs and wetland	0.00
Low vegetation	112.69
Bare earth	0.00
Impervious surface	1.51
Water	0.00

ACREAGE OF RESTORATION AREA
2.77 acres

ACREAGE OF DRAINAGE THROUGH RESTORATION AREA
163.45 acres

2. Select your management priorities

Agriculture

Restoration can help manage nutrients and improve soil and livestock health.

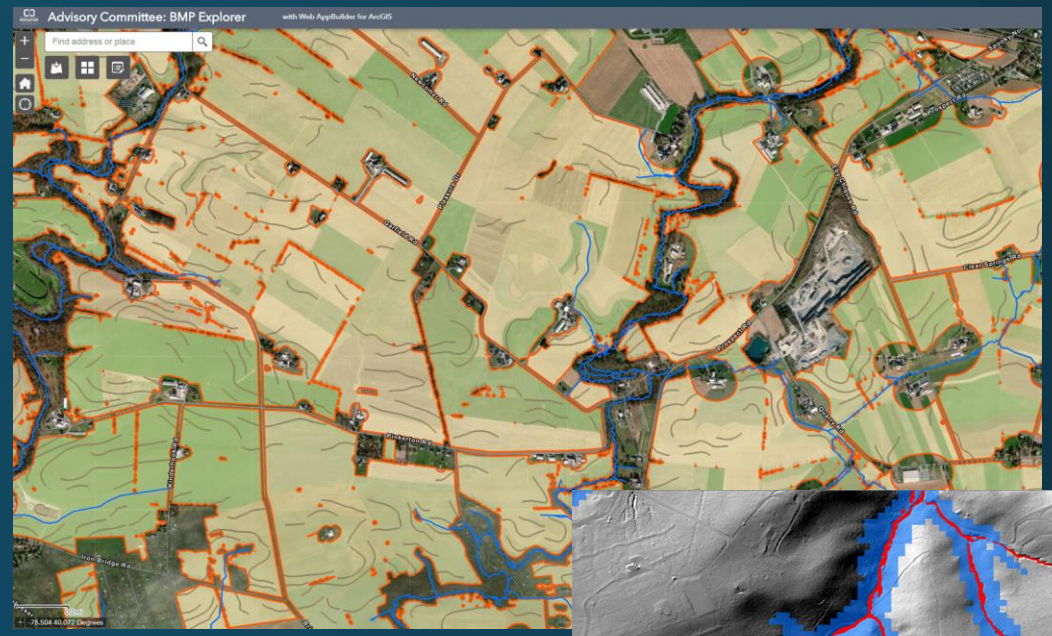
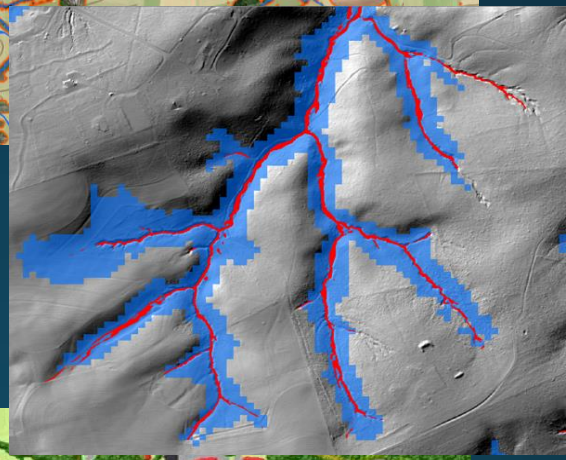
Recreation

Hunting, fishing, and exploring your property safely.

Wildlife

Young and mature forests and the species that inhabitat them.

Info Partners Resources

Thank you!

lkeddell@chesapeakeconservancy.org